

PIIM

2000-01 Montana ESEA Title II Eisenhower Study

*Teacher Self-Assessment of Content Knowledge and Student Performance
with Regard to Montana's Science and Technology Content Standards
and
Survey of Professional Development Quality*



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2000-01 Montana ESEA Title II Eisenhower Study

TABLE OF CONTENTS

Letter from the Superintendent.....	3
Project Director's Notes	4
2000-01 Montana ESEA Title II Eisenhower Study	5
2000-01 Responding Teachers by Grade Level and Subjects Taught.....	7
Chart 1 2001 Kindergarten – Grade 12 Montana Science Standards of Concern.....	10
Kindergarten – Grade 12 Teacher Self-Assessment Science Findings	11
Overview of Teacher Self-Assessment Findings Indicating Capacity to Implement Newly Revised Science Standards	12
Chart 2 2001 Kindergarten – Grade 12 Montana Technology Standards of Concern	14
Kindergarten – Grade 12 Teacher Self-Assessment Technology Findings.....	15
Chart 3 – Professional Development Quality Teacher Agreement to Statements Reflecting OERI Principals of High Quality Professional Development and Montana Accreditation Rule 10:55:714	18
Chart 4 – Professional Development Quality Indicators Report by Year and Grade Level	20

Appendices

- A -- Overarching Goal
- B – Rule 10.55.714 Professional Development
- C – Participating Districts by District/Size Category/County and Region
- D – Participating Districts by MASS Region
- E – Teaching Assignments by Subject Area, 1996-97 and 1998-99
- F – School District Enrollment Size Categories
- G – Percent of Total Enrollment for School District Size Categories
- H – 1999 and 2000 Eisenhower ESEA Title II Teacher Self-Assessment and Professional Development Survey

Message from the State Superintendent

It is with pride that I announce the publication of the 2000-01 Montana ESEA Title II Professional Development Study. This study is the second survey of Montana K-12 teachers to determine their professional development needs when implementing the Montana content and performance standards. This 2000-01 survey provided an opportunity for teachers to assess their content knowledge and student performance in relation to the new science and technology standards. A total of 3,310 teachers voluntarily participated in the study. Although the results are not based upon a random sampling of Montana districts, they do provide a look at the current professional learning needs of about one-third of Montana K-12 teachers.

As you read the results, you need to know that the purpose of the survey was to gather information from K-12 teachers to identify priorities for content-rich professional development, current instructional challenges, and areas for improvement of professional development offerings. This report contains the results from that comprehensive survey specifically addressing the science and technology content and pedagogical needs of K-12 teachers. These results will assist in planning professional development as the Montana school districts implement the content and performance standards. The study results will also continue the long-term evaluation of professional development quality.

Montana's education system is doing well, but we know there are pockets of concern that must be improved. By using the results from this study, the Office of Public Instruction and its partners (the Board of Public Education, professional education associations, higher education, and tribal education) can design and deliver relevant and timely professional development programs. In the spirit of collaboration and cooperation, we are working together to establish a responsive system of professional development that is regionally delivered and reflective of individual, group, and organizational learning needs.

To meet the challenges of today's diverse learners and the demands of an ever-changing technological world, educators need tools, resources, and support. Teachers are expected to align curriculum, instruction, and classroom assessment to state standards, to use researched-based instructional strategies, and to meet the learning needs of all students. Well-prepared and highly qualified teachers are the primary link to improved performance for all students.

Making sure that all Montana students reach their full learning potential is the first order of the education business. Together, through ongoing, high quality, meaningful professional development, we will continue to get that job done.

A handwritten signature in cursive script, reading "Linda McCulloch". The signature is written in black ink and is positioned at the bottom of the page, below the main body of text.

Project Director's Notes

“Whatever the combination of uses, the role of systemic analysis of need is reduction of uncertainty.” Jack McKillip

The enormous amount of information collected and analyzed through the 2000-01 Montana ESEA Title II Eisenhower Study gives one the understanding of the complex nature of identifying professional development needs, and prioritizing those needs so that focused, long-term, job-embedded professional development can occur. This report was written in order to establish baseline data prior to the initiation of any large-scale professional development initiative in the state. A follow-up teacher self-assessment of the Science and Technology Standards is scheduled to be conducted in the fall of 2005 in order to measure the impact the professional development opportunities offered since the 1999-00 Montana ESEA Title II Eisenhower Study.

To date, the largest program change brought about by the 1999-00 Montana Title II Eisenhower Study is mathematics focus for the Higher Education Eisenhower sub-grants. Due to the findings of the 1999 study, \$358,600 was dedicated to content rich professional development in the areas of Data Analysis, Probability and Statistics, Geometry, Early Algebra and Reading in the Mathematics Content area. Due to the lack of standards awareness identified through the 1999 study, the Montana State Reading Council devoted considerable time to the implementation of the Montana Reading Standards in their yearly conferences. Finally, districts across the state are more aware of the need to make their professional development programs more meaningful to educators. The greatest change in the professional development quality indicator survey between 1999 and 2000 was that teachers are finding their professional development is leading to greater changes in teaching and learning in their classroom.

The ESEA Eisenhower Title II program views this study as one tool in an ongoing, continually evolving, collaborative inquiry process. If you use this information to change practices, policies, or secure additional funding, please let the Office of Public Instruction know (through the OPI web site <http://www.metnet.state.mt.us>) in order to justify continuation of the study.

THIS REPORT GIVES A SUMMARY OF CURRENT STATE PROGRAM STRENGTHS, NEEDS IDENTIFIED FOR IMPROVEMENT, AND RECOMMENDATIONS FOR INITIATIVES IN SCIENCE AND TECHNOLOGY PROFESSIONAL DEVELOPMENT.

2000-01 Montana ESEA Title II Eisenhower Study

Background Information

In November 2000, the Montana Eisenhower Program conducted a comprehensive survey to determine the science and technology content and pedagogy needs of K-12 teachers, and to continue the longitudinal evaluation of professional development quality with regard to the Montana Eisenhower Program's four indicators of quality. They are:

1. Professional development focuses on individual, collegial, and organizational improvement,
2. Professional development focuses on content standards and reflects best research in teaching and learning,
3. Professional development supports the implementation of new content and teaching strategies through collaboration, and
4. Professional development is planned through a data analysis process.

Study Intent

The Montana ESEA Title II Professional Development Study is a tool to assist in planning state and district professional development as the state and districts transition from Montana's Model Learner Goals to Montana's Content and Performance Standards. Once state and district assessments are aligned to the standards, student achievement data will be used as a primary planning tool and the study will be used for longitudinal analysis and as a complimentary planning tool. Implementation of the survey would also provide K-12 teachers of science and technology with the opportunity to reflect on the newly revised Science and Technology Content Standards.

Study Objectives

1. Identify priorities for content-rich professional development aligned to the newly revised Science and Technology Content Standards.
2. Identify current instructional challenges found within the Science and Technology Content Standards.
3. Identifying grade levels that do and do not currently teach the benchmarks found within the Science and Technology Content Standards.
4. Identify areas for improvement of overall professional development quality.
5. Provide K-12 teachers of science and technology with the opportunity to reflect on the newly revised Science and Technology Content Standards.

Study Development

- Planning for the study began after statewide program analysis of the district Eisenhower Final Program Reports in December 1998. The Montana Eisenhower Advisory Team (MEAT) established a need to verify the final program analysis with teacher response data. It was determined, at that time, the content needs for mathematics teachers should be identified as well.
- The content component idea for the survey was then taken to Montana's School Improvement Division. The School Improvement Division administrator requested that Montana's newly revised content standards be used to identify professional development needs around the content and skills found in the standards.
- Further discussions with the Office of Public Instruction's (OPI) Curriculum Services Department administrator led to a Mathematics and Reading Content Standards focus in the 1999 study.
- A subcommittee of the MEAT met in January 1999 in order to create a final draft of the survey. The subcommittee decided to use the National Council of Staff Development Standards for Staff Development (NSDC, 1995) as the basis for 14 response prompts regarding the quality of staff development. These 14 prompts were selected from the NSDC standards because of their strong alignment to Montana's Eisenhower Objectives (see Appendix A). After consulting with Montana's School Improvement administrator, the response prompts were then edited and modified to also align with the definition of Professional Development found in Rule 10.55.714 of the Montana School Accreditation Standards and Procedures Manual (see Appendix B).
- The 1999 mathematics and reading study was conducted with the implementation of a paper and pencil self-assessment and professional development survey in April and May of 1999.
- The Golden Triangle Curriculum Consortium, as a pilot for future survey delivery, repeated the Eisenhower study on-line in May 1999.
- Because of the great success of this pilot study, it was determined that Golden Triangle Curriculum Consortium be contracted to produce an on-line version of the 2000 Science and Technology Teacher Self-Assessment and Professional Development Study.
- The 2000 Science and Technology Teacher Self-Assessment and Professional Development Survey was conducted on-line and via paper and pencil during the month of November 2000.
- For a complete list of participating districts, see Appendix C. For a map of the distribution of all participating districts, see Appendix D.

2000-01 Responding Teachers by Grade Level and Subjects Taught

Grade Level(s) Taught	# In State	# Participating in Survey	Approximate % of State Total Participating
K-4	3,262*	1,137	35%
Science K-12	4,394*	1,291	30%
All Subjects	10,306	3,310	31%

*TOTALS ARE APPROXIMATIONS. Number of teachers in grades K-4 is an estimation derived from 2000-01 FTE data. Science K-12 includes Self-Contained and Science Teachers (see Appendix E).

Response

The primary intent of the survey was to gather baseline consensus data for each district. Districts were required to return 75 percent of the science and technology surveys in order to be included in this study and to receive a report. There were 4,138 teachers pre-registered to complete the Title II Self-Assessment and Professional Development Survey. A total of 3,310 teachers responded. Thus, an 80 percent rate of return was achieved overall.

Teachers of ALL subject areas were asked to respond to the Professional Development Quality Survey and the Teacher Self-Assessment in Technology.

A total of 3,310 teachers participated in this study. One-thousand, one hundred and thirty-seven K-4 teachers, 940 grades 5-8 teachers and 1,233 grades 9-12 teachers responded to at least one part of the three-part questionnaire. Thus, the responses of 31 percent of Montana's 10,306 full-time equivalent staff are represented by this study.

Districts by Size (see Appendices F and G for size of categories and distribution throughout state)

District Size Category	Total # of This Size in Montana	Total # of Participating Survey Districts	% of This Category Participating
1E and/or H	13	5	39%
2E and/or H	36	12	34%
3E and/or H	41	14	35%
4E and/or H	95	12	13%
5E and/or H	99	16	17%
6E and/or H	110	42	39%
1K	13	7	54%
2K	42	5	12%
TOTALS*	447	114	26%

Profile of Responding Districts by Size

Participating districts represented all levels, sizes, and locations throughout Montana.

- The largest percentage of participating districts were 1K districts, K-12 districts with greater than 400 students. Seven of the 13 1K districts participated in this study.
- The second largest percentage of participating districts was 6E. The 6E districts are elementary districts with fewer than 41 students. Forty-two of the 110 6E districts participated in this study.
- The third largest percentage of participating districts was 1E and 1H districts. The 1E districts are elementary districts with greater than 2,500 students, 1H high school districts are districts with greater than 1,250 students. Five of the 14 1E and H districts participated in this study.
- The smallest percentage of participating districts was 4E and 4H, and 5E and 5H districts. These districts have between 41 to 400 students in the elementary district and 75 to 200 students in the high school district. These districts represent approximately 17 percent of Montana's total school enrollment.
- A total of 26 percent of all Montana districts participated in the Title II Eisenhower Teacher Self-Assessment in Science and Technology and Professional Development Survey.

Participating Districts by MASS Region

MASS Region	Total # of Participating Districts*	Total # of Districts in Region*	% of MASS Region Districts Participating in Survey
4 Rivers	19	79	24%
Southcentral	10	60	17%
Northcentral	7	56	13%
Southcast	16	51	32%
Central	10	26	39%
Northwest	9	43	21%
Western	20	50	40%
Northeast	4	45	9%
Hi-Line	19	37	52%
TOTALS	114	447	26%

*For a map of the participating districts by MASS region, see Appendix D.

Profile of Regional Participation

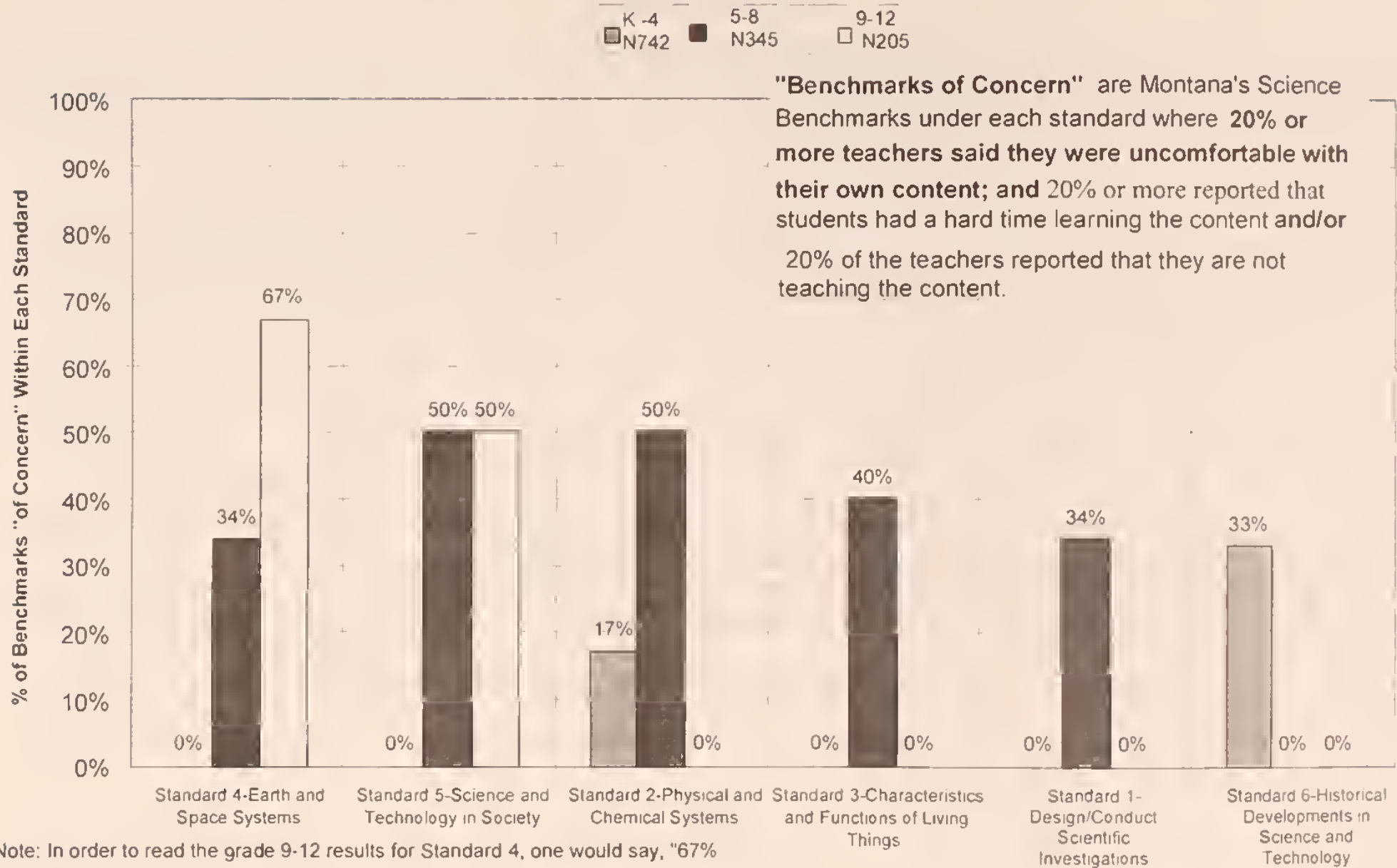
There are nine designated Montana Association of School Superintendents (MASS) regions in Montana.

- ◆ The largest percentage of participating districts was from the Western MASS region, with 40 percent of its 50 districts participating (MASS region “districts” are combined K-12 if appropriate).
- ◆ The second largest percentage of participating districts was from the Central MASS region with 39 percent of its 26 districts participating.
- ◆ The smallest percentage of participating districts was in the Hi-Line region.
- ◆ With the exception of the Northeast and Northcentral MASS regions, at least 15 percent of the districts in each MASS region participated in this survey (see Appendix D for MASS regions).

Limitation

Information from this survey reflects the response data from all participating teachers in districts that voluntarily implement this survey. This data is not drawn from a random sampling.

Chart 1
2001 Kindergarten – Grade 12 Montana Science Standards of Concern



Note: In order to read the grade 9-12 results for Standard 4, one would say, "67% of the Benchmarks within Standard 4 were of concern to 20% or more of the grades 9-12 teachers surveyed."

Standards Listed by Level of Concern

Kindergarten – Grade 12 Teacher Self-Assessment Science Findings

The chart above represents the aggregation of benchmark level teacher self-assessment results. A standard of “Greatest Concern” means that there is a very high percentage of benchmarks within that standard that are concerns because teachers lack content knowledge and either do not teach the benchmark or find the benchmark difficult for students to learn.

- ☞ Compared to grades K-4 and 9-12 the grades 5-8 teachers reported the greatest concern in content knowledge and ease of student learning of the Montana Science Standards.
- ☞ Thirty-three percent to 50 percent of the benchmarks in **Standards 1 – 5** were of concern to teachers of science in grades 5-8.
- ☞ **Science Standard 4**, “Students demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space (Earth and Space),” and **5**, “Students understand how scientific knowledge and technological developments impact society (Science and Technology in Society).” were of concern for teachers of science in grades 5-12.
- ☞ Of greatest concern for teachers of science in grades 5-8, was **Science Standard 5**, “Students understand how scientific knowledge and technological developments impact society (Science and Technology in Society),” and **Science Standard 2**, “Students demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems (Physical/Chemical Science).”
- ☞ **Science Standard 4**, “Students demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space (Earth and Space),” was of greatest concern for teachers of science in grades 9-12.
- ☞ Teachers of grades K-4 reported less concern of their content knowledge of the Science Standards than grades 5-8 or 9-12.
- ☞ **Science Standard 6**, “Students understand historical developments in science and technology.” was of greatest concern for teachers of science in grades K-4.
- ☞ Concern over content knowledge of **Standard 4**, Earth and Space Systems increased for teachers of grades 5-8 to teachers of grades 9-12.
- ☞ Concern over the content knowledge of **Standard 2**, Physical and Chemical Systems, increased from grades K-4 to grades 5-8.

Overview of Teacher Self-Assessment Findings Indicating Capacity to Implement Newly Revised Science Standards

Montana has long enjoyed its place among the top performing states in the nation with regard to student achievement in science on nationally recognized measures. Education is valued in Montana as demonstrated by our students' successes. Thus, it is important to recognize and identify strengths in the current system and in the newly revised standards. These strengths give us a picture of the foundation that is already in place in order to support the successful implementation of the newly revised Science Standards. This study was designed to provide baseline data concerning teacher needs for professional development. Some of the findings of the teacher self-assessment indicating a strong capacity to successfully implement the newly revised standards include:

- ☞ Overall, of the four standard areas surveyed over the past two years, teachers of science responded with the least concern in scientific content knowledge and their students' ability to learn.
- ☞ Grade 4 teachers were comfortable with their own content knowledge of over 89 percent of the Science Benchmarks and 76 percent reported they are teaching 100 percent of the benchmarks.
- ☞ Teachers in at least one grade, kindergarten – grade 4, report that with instruction and practice, students do not have a difficult time learning 82 percent of the Science Benchmarks.
- ☞ Grades 9-12 teachers, regardless of their specific scientific field of study, were comfortable with their content knowledge of 79 percent of the Science Benchmarks and all of the benchmarks are being taught by at least 86 percent of the high school teachers of science.
- ☞ Eighty-one percent of the high school teachers responding said that they had read the Science Standards prior to taking the survey.

Increasing Awareness of Standards

Approximately 52 percent of the teachers surveyed had reviewed the Science Standards prior to completing the survey. Thirty percent read the reading/math standards prior to the survey in 1999. This is a 22 percent increase over teacher's awareness of the standards since 1999 and a 15 percent increase over the percentage of teachers that had read the technology standards prior to taking the survey in 2000.

Survey as a Professional Development Strategy

Four hundred ninety-nine teachers responsible for teaching science read and reflected upon the Montana Science Standards and Benchmarks for the first time because of the implementation of this survey.

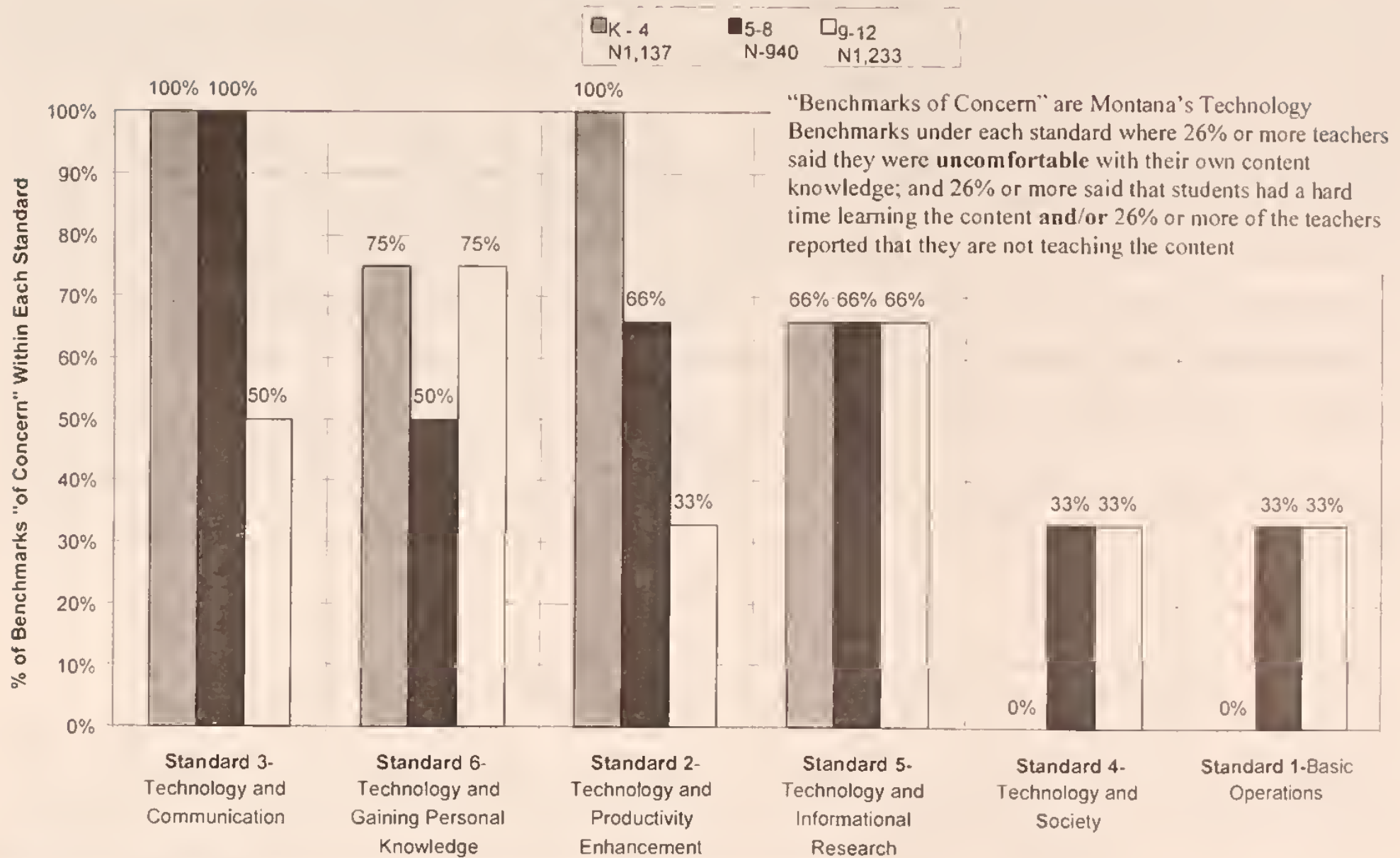
Professional Development Recommendations for Kindergarten – Grade 12 Science

- ☞ This teacher self-assessment indicates the need for a statewide, long-term, sustained effort to increase the overall scientific content knowledge for teachers teaching science in grades 5-8.
- ☞ Preservice preparation for elementary certified teachers should include the content found in the grades 5-8 standards, as many elementary certified teachers do teach in the middle grades after their graduation.
- ☞ Specific content-rich professional development for grades 5-12 teachers in the areas of Earth and Space Systems (**Standard 4**) and Science and Technology in Society (**Standard 5**) is also recommended.

Considerations for Further Research

- ☞ Do typical Montana district curriculum and/or course offerings in high school cover the benchmarks in **Standard 4**, Earth and Space Systems?
- ☞ At what grade level is Earth and Space Systems (**Standard 4**) most diligently covered? Is that grade level appropriate for the rigor of the current Earth and Space Systems Standard?
- ☞ Is the content in **Standard 5**, Science and Technology in Society, new content for grades 5-12 teachers?
- ☞ Do typical Montana district curriculum guides and/or course offerings in grades 5-12 cover the content in **Standard 5**?
- ☞ Are the resources necessary to teach the appropriate level of content about Physical and Chemical Systems available to grades K-8 teachers?

Chart 2
2001 Kindergarten - Grade 12 Montana Technology Standards of Concern



Note: In order to read the grades K-4 results for Standard 3, one would say “100% of the Benchmarks within Standard 3 were of concern to 25% or more of the grades K-4 teachers surveyed.”

Kindergarten – Grade 12 Teacher Self-Assessment Technology Findings

The chart above represents the aggregation of benchmark level teacher self-assessment results. A standard of “Greatest Concern” means that there is a very high percentage of benchmarks within that standard that are concerns because teachers lack content knowledge and either do not teach the benchmark or find the benchmark difficult for students to learn.

- ☞ Thirty-three percent or more of the benchmarks within every Montana Technology Content Standard were of concern to over 25 percent of the responding kindergarten through grade 12 teachers.
- ☞ Overall, K-4 teachers express more discomfort with their content knowledge of the Technology Standards and the ability for their students to learn that content than those at other grade levels.
- ☞ **Standard 3**, Technology and Communication, shows the greatest total concern with regard to lack of teacher content comfort, difficulty in student learning, and teachers not teaching the benchmarks.
- ☞ One hundred percent of the benchmarks found in **Standard 3**, **Standard 6**, Technology and Gaining Personal Knowledge, and **Standard 2**, Technology and Productivity Enhancement, were of concern to over 25 percent of the responding grades K-4 teachers.
- ☞ Fewer teachers at the high school level responded that they were uncomfortable with the content of the Technology Standards or that they do not teach the Technology Standards than any other grade level group.
- ☞ K-12 responding teachers are most comfortable with **Standard 1**, Basic Operations of Technology.
- ☞ Content discomfort and difficulty in student learning of **Standard 2**, Technology and Productivity Enhancement, decreased by 33 percent at each grade level interval.

Findings Indicating Capacity to Implement the New Technology Standards

Technology content standards on which this survey was based are new to the state of Montana. Aside from the teacher content concern expressed by high school teachers of reading, the K-12 technology standards appear to pose the most content concern of the four standards areas studied to date (reading, mathematics, science, technology). Other studies, however, indicate that Montana teachers and school systems do possess the capacity to fully implement these new standards if the necessary professional development programs are implemented.

Recent Education Week/Market Data Retrieval/Harris Interactive Poll results, printed in the May 10, 2001, edition of Education Week, gives further insight on Montana's capacity to implement the new standards for the following reasons:

- Montana is one of 35 states that have adopted technology standards into their list of core academic standards (pg. 55),
- Montana can boast a per student computer ratio of 3.1 per computer statewide, and 2.2 in high needs areas; the national average is 4.9 students per computer (pg. 56), and
- Eighty-six percent of Montana schools reported Internet access from one or more classrooms (pg. 59).

The aforementioned report shows that Montana students have greater access to computer technology and the Internet than approximately 50 percent of other states nationwide. It also shows, unlike many of the other states, computer and Internet access is greater in high poverty/high minority schools than in low poverty/low minority schools.

Increasing Awareness of Standards

Approximately 37 percent of the teachers surveyed reviewed the Montana Technology Content Standards prior to completing the self-assessment. This is a 7 percent increase over the percentage of teachers that had read the Mathematics and Reading Standards in the spring 1999.

Survey as a Professional Development Strategy

Approximately 2,060 teachers, responsible for teaching, read and reflected upon the Montana Standards and Benchmarks for the first time because of the implementation of this survey.

Professional Development Recommendations for Kindergarten – Grade 12 Technology

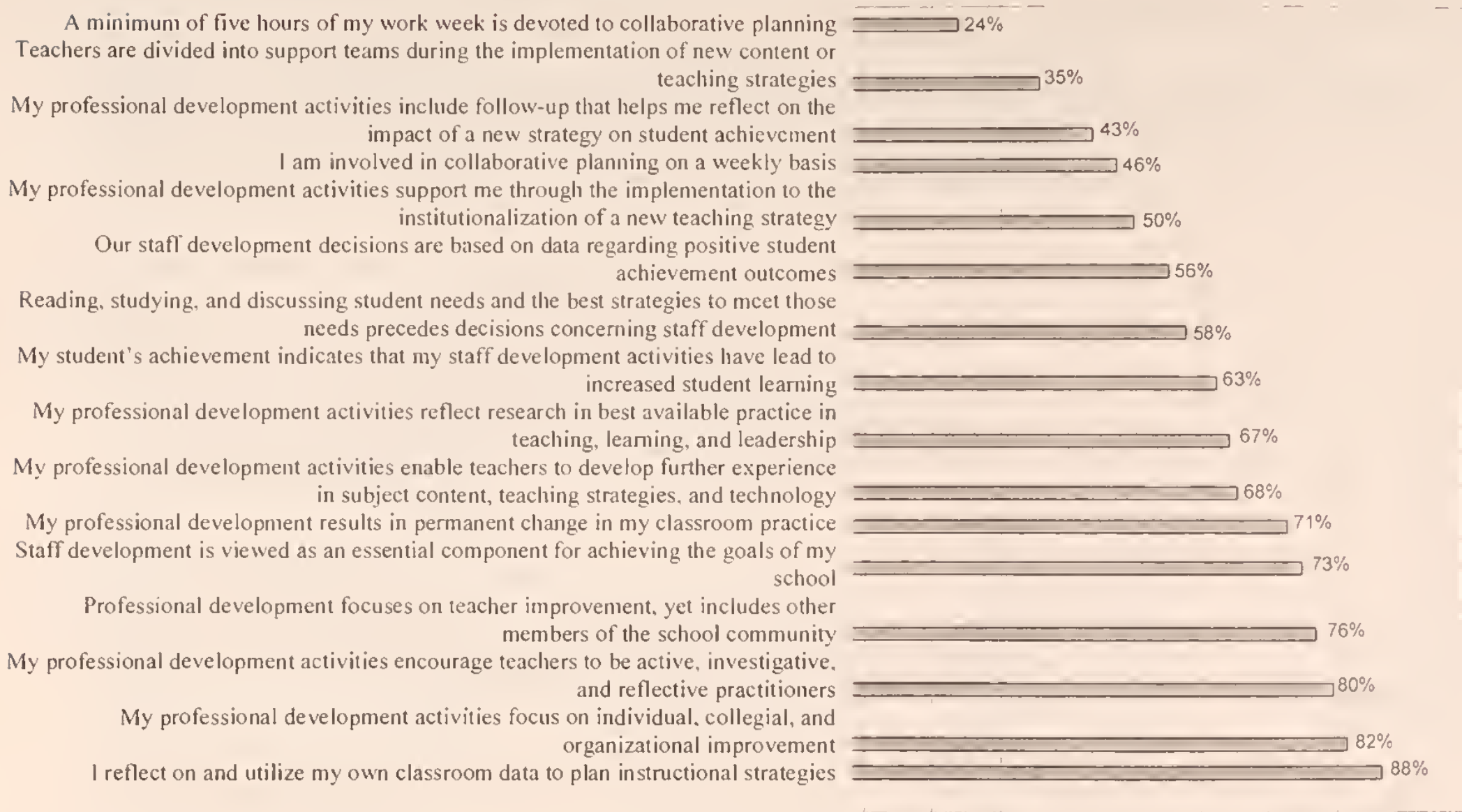
- The technology portion of the Title II Teacher Self-Assessment indicates the need for a statewide focus on the viable uses of telecommunication for educational purposes.
- There also seems to be a strong need for cross program professional development in order to allow teachers to improve their own comfort of the content found within **Standard 3**, communications.
- Training on specific programs, such as the Jason Project, GLOBE, and TALES, which allow teachers to develop an understanding of the content in **Standard 3**, communications, as well as the content found within **Standard 6**, using technology to gain personal understanding, should be more thoroughly disseminated throughout the state.

- Short work sessions on ways to set up school research partners, or writing partners should take place at the educational conferences across the state.
- Districts should include professional development goals that support the improvement of integrating the use of technology in all content areas.

Questions for Further Research

- Are the demands on teachers' and administrators' time a primary reason for the lack of content knowledge around technology?
- Do administrators and parents support the use of the Internet?
- Are teachers and students limited in their use of the Internet for communication and research because of concerns over inappropriate email and Internet content?
- How many students actually have ready access to the Internet?
- How much professional development has been devoted to best practices in teaching technology?
- Is content in the technology standards built into the curriculum units in the core content areas?

Chart 3-Professional Development Quality Teacher Agreement to Statements Reflecting OERI Principals of High Quality Professional Development and Montana Accreditation Rule 10:55:714



Percent of K-12 Teachers in Strong Agreement or Agreement to Professional Development Quality Statements

Professional Development System Strengths

The statements teachers agreed to most often were statements that indicated that professional development focuses on individual, collegial, and organizational improvement.

- ❖ Eighty-two percent agreed that their professional development focuses on individual, collegial and organizational improvement.
- ❖ Seventy-six percent agreed that professional development focuses on teachers as central to student learning, yet includes all members of the school community.
- ❖ Seventy-three percent agreed that professional development is viewed as an essential component for achieving the goals of the school.

The statements teachers agreed or strongly agreed to second most **often** were descriptors of professional development that focus on high standards and reflect best research in teaching and learning.

- ❖ Eighty percent of all teachers surveyed agreed or strongly agreed that their own professional development activities encouraged teachers to be active, investigative and reflective practitioners.
- ❖ Sixty-eight percent agreed that their professional development experiences in subject content, teaching strategies and uses of technology helped them develop the skills necessary for teaching to high standards.
- ❖ Sixty-seven percent of all teachers surveyed agreed that their professional development activities reflected best available practice in teaching, learning and leadership.

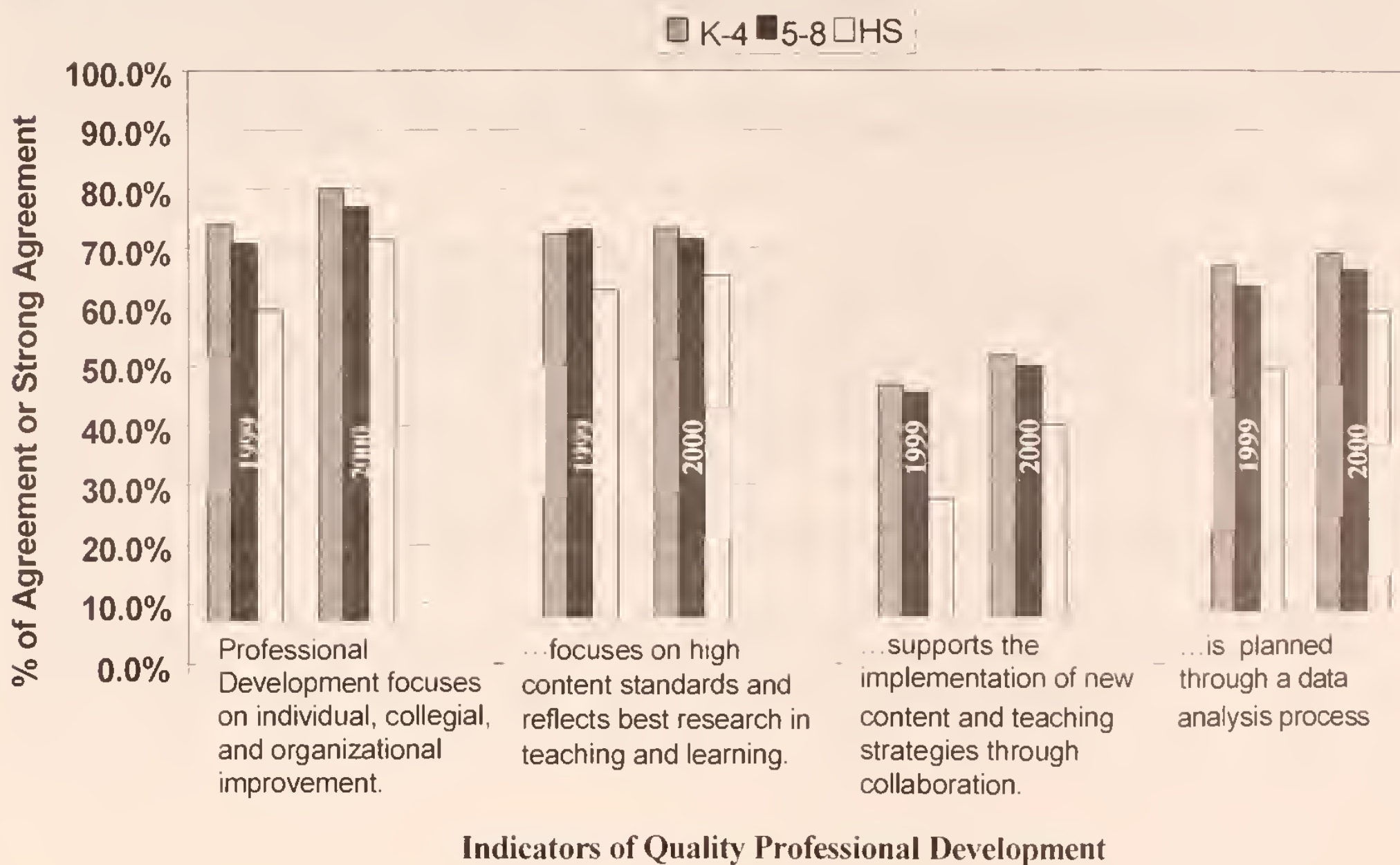
Professional Development System Weaknesses

The statements most teachers agreed or strongly agreed to the **least often**, were descriptors of professional development that support the implementation of new teaching strategies through ongoing, collaborative professional development.

- ❖ Thirty-five percent agreed that they were organized into support teams during the implementation of new content and/or teaching strategies.
- ❖ Forty-six percent agreed that they are involved in collaborative planning on a weekly basis.
- ❖ Fifty percent agreed that their professional development supports them during implementation into institutionalization of new content and teaching strategies.

**Chart 4-Professional Development Quality Indicators Report
by Year and Grade Level**

In order to evaluate current professional development with regard to the Eisenhower Quality Indicators, the above survey results were aggregated into four indicators of quality shown below. Four questions from Chart 3 were combined to reflect the level of agreement for each of the four Quality Indicators shown below. The questions from Chart 3 were asked, and given the same weight, in 1999 and in 2000. (See Appendix H for a list of questions under each indicator.)



Grade Level Differences

- ◆ High school teachers' agreement level has increased in all four of the Indicators of Quality from the 1999 to the 2000 survey results. Although the ranking of categories by agreement is the same for all three grade levels (K-4, 5-8, 9-12), 5 percent or fewer high school teachers agreed or strongly agreed to statements in all categories.
- ◆ In the descriptors of professional development focused on individual, collegial and organizational improvement (the highest of all the overall categories) 71 percent of the high school teachers were in agreement compared to 76 percent of the grades 5-8 teachers and 80 percent of grades K-4 teachers.
- ◆ In the descriptors of professional development that supports the implementation of new teaching strategies through collaboration, there was 40 percent agreement compared to 50 percent of grades 5-8 teachers and 51 percent of grades K-4 teachers.

Improvement Over Time

- 👤 In 1999, 60 percent of all teachers agreed to the statement that professional development resulted in permanent changes in their classroom practices (1999 Montana ESEA Title II Eisenhower Study, pg. 41). In 2000, 71 percent agreed to the same statement. This 11 percent increase in agreement was the largest increase in agreement about any one statement from 1999 to 2000.
- 👤 There was an increase in agreement with all other statements except "I reflect on and utilize ...," where the rate of agreement dropped 2 percent and "... enable teachers to develop further experiences in subject ...," which also dropped 2 percent.
- 👤 The rate of agreement increased between 1 and 6 percent for all other statements.
- 👤 The level of agreement showed the greatest improvement in the first indicator, Professional Development focuses on individual, collegial and organizational improvement. The greatest improvement was at the high school level where 12 percent more teachers agreed or strongly agreed to the statements reflecting the first indicator.
- 👤 There was little change on the second indicator, Professional Development focuses on high content standards and reflects best research in teaching and learning. The second indicator carried the highest level of agreement in 1999 and the second highest agreement in 2000.
- 👤 The third indicator, Professional Development supports the implementation of new teaching strategies through collaboration, showed the second greatest growth in agreement levels, yet remains the indicator with the lowest level of agreement. Thirteen percent more high school teachers agreed to statements in the third indicator in 2000 than in 1999.
- 👤 Improvements are also indicated in the area of data-driven school improvement, which is the fourth indicator.

Considerations in the Analysis of the Above Data

An improvement trend in 2001 will further verify an indication that teachers perceive that their professional development more strongly reflects the indicators of quality set by the Eisenhower program and the definition of professional development outlined in Montana School Accreditation Standard 10.55.714. Two factors must be considered when analyzing the improvements found between 1999 and 2000. They are:

- 1) Two hundred and ninety-one high school teachers responded to the Eisenhower Professional Development Teacher Quality Survey in 1999; 1121 high school teachers responded to the Eisenhower Professional Development Teacher Quality Survey in 2000.
- 2) The on-line format of the survey may have made the overall attitude about professional development more positive than the paper and pencil format.

Recommendations for Improving Montana's Professional Development System

Over the past three years, Montana schools, districts, the university system and the Office of Public Instruction have worked to improve the impact that professional development has on teaching and learning. Researched best practices in professional development, supported by organizations such as The National Staff Development Council, The National Association of Supervision and Curriculum Development and the Office of Educational Research and Improvement have been adopted by many schools and districts throughout the state (Eisenhower End-of-Year Evaluation Results, 1997-1999) and the newly adopted Montana School Accreditation Standards and Procedures outline high expectations with regard to professional development quality for all Montana teachers.

Although it is too soon to be certain that the combined efforts of the aforementioned groups has indeed improved the quality of professional development in Montana, the upward trend in agreement shown in the comparison of the 1999 and 2000 responses seems to support the continuation of a collaborative focus on the intentional design and delivery of professional development that is aligned to Montana's Content and Performance Standards and researched best practices.

As district budgets continue to tighten across Montana, districts and associations must work to continue to improve Montana's professional development system. Additional time and funding allocated for collaborative, ongoing activities following any out-of-building professional development must be maintained in order for ALL teachers to implement new content and teaching strategies into their classroom.

Further efforts to educate staff, school board members, parents and the community about the importance of investing in quality professional development must be undertaken. State and local policies and funding decisions must continue to be made to support ongoing, job-embedded professional development if ALL students are to be proficient in ALL standards.

Staff development cannot be confined to a few specific days in the school calendar, but must be viewed as a process that is based on the continuous evaluation of teaching strategies and content knowledge. High quality delivery of professional development content appears to be the norm throughout Montana. The addition of collaborative follow-up activities for teachers following conferences and workshops will build upon that strength and thereby increase the effectiveness of the professional development system.

In all professional development planning, an effort must be made to continue to provide quality delivery of new content and strategies aligned to individual, collegial and organizational improvement. Current policies and practices that have supported such professional development must be maintained as the state and districts reform their professional development systems in the face of financial hardship.

Montana's Eisenhower Professional Development Program

Overarching Goal

Building the capacity of Montana's Professional Development Program to provide sustainable change in teaching practices through ongoing, job-embedded professional development that leads to ALL students meeting high state content and performance standards.

Objectives

- ◆ Determination of high-quality professional development activities will be aligned to findings from the analysis of at least three sources of data to include two sources of disaggregated student performance data and one quantitative study to assess specific instructional needs.
- ◆ Professional development will be provided to address the needs of:
 1. Teachers in schools receiving Part A of Title I assistance; and
 2. Teachers teaching students who are identified as disadvantaged or otherwise at risk of not attaining proficiency of Montana's Content and Performance Standards.
- ◆ Professional development programs will specifically address student achievement improvement objectives and teacher needs indicated in data findings.
- ◆ High-quality professional development is aligned to Montana's Content and Performance Standards and Researched Instructional Methods.
- ◆ Each Eisenhower program will provide job-embedded professional development that is sustained, ongoing and contributes to improvements in student achievement.

Excerpt from Montana School Accreditation Standards and Procedures Manual
Effective July 1, 2001

10.55.714 PROFESSIONAL DEVELOPMENT (1) By definition, professional development:

- (a) focuses on teachers as central to student learning, yet includes all other members of the school community;
- (b) focuses on individual, collegial, and organizational improvement;
- (c) respects and nurtures the intellectual and leadership capacity of teachers, principals, and others in the school community;
- (d) reflects proven research and practice in teaching, learning, and leadership;
- (e) enables teachers to develop further experience in subject content, teaching strategies, uses of technologies, and other essential elements in teaching to high standards;
- (f) promotes continuous inquiry and improvement embedded in the daily life of schools;
- (g) is ongoing and sustained;
- (h) is planned collaboratively by those who will participate in and facilitate that development;
- (i) requires substantial time and other resources;
- (j) is driven by a coherent long-term plan; and
- (k) is evaluated ultimately on the basis of its impact on teacher effectiveness and student learning, and this assessment guides subsequent professional development efforts.

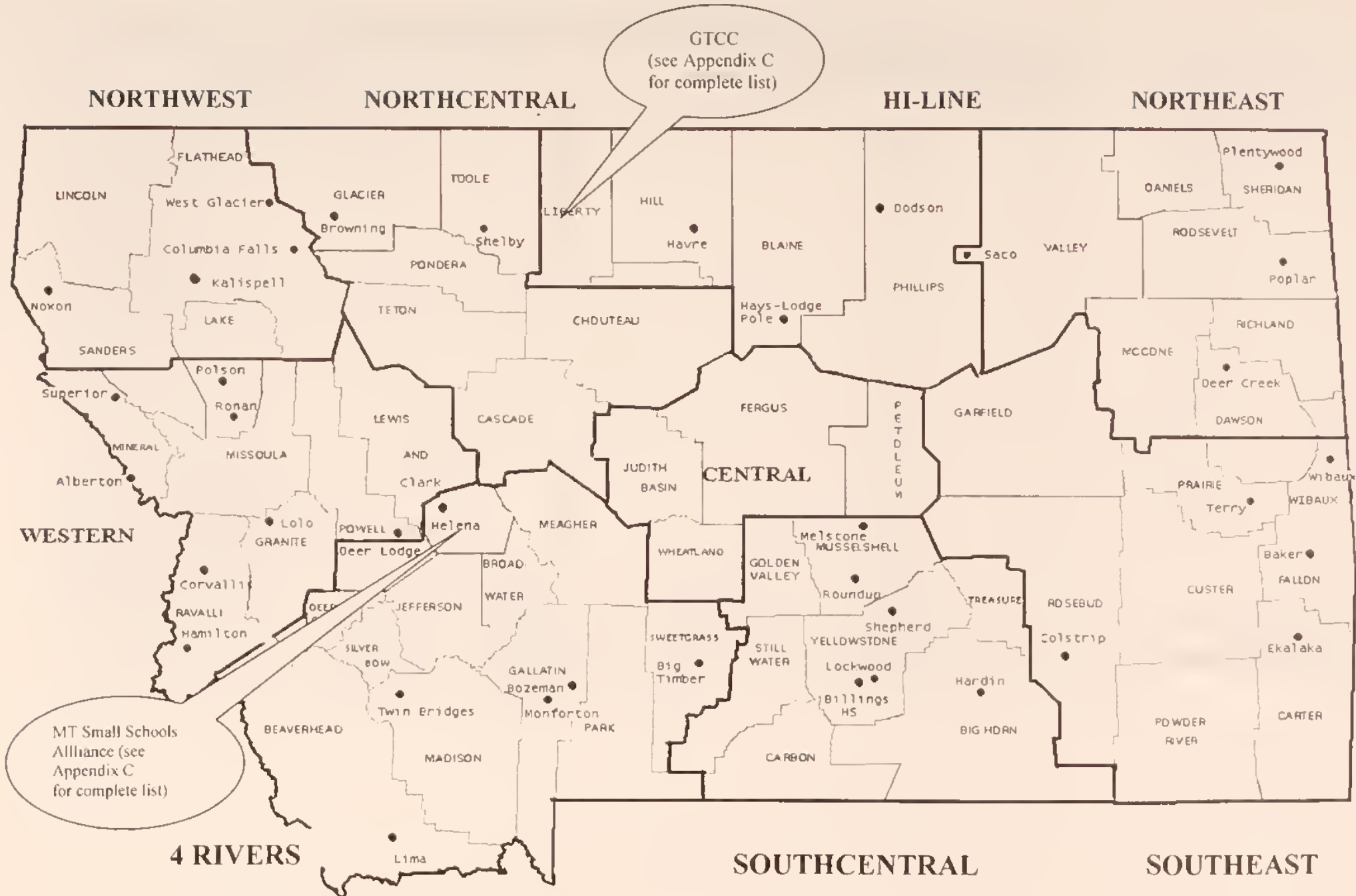
Participating Districts by District/Size Category/County and Region

District	Size Category	County	Region
Alberton K-12 Schools	2K	Mineral	Western
Alder Elementary	6E	Madison	4 Rivers
Auchard Creek Elementary	6E	Lewis and Clark	Western
Avon Elementary	5E	Powell	Western
Baker K-12 Schools	1K	Fallon	Southeast
Basin Elementary	6E	Jefferson	4 Rivers
Bear Paw Elementary	6E	Blaine	Hi-Line
Beaverhead Co High School	2H	Beaverhead	4 Rivers
Benton Lake Elementary	6E	Chouteau	Central
Benzien Elementary	6E	Garfield	Southeast
Big Dry Creek Elementary	6E	Garfield	Southeast
Blue Sky K-12 Schools	2K	Hill	Hi-Line
Bozeman Public Schools	1E/1H	Gallatin	4 Rivers
Browning Public Schools	2E/2H	Garfield	Southeast
Cardwell Elementary	5E	Jefferson	4 Rivers
Carter Elementary	6E	Chouteau	Central
Chinook Elementary	4E/3H	Blaine	Hi-Line
Clancy Elementary	4E	Jefferson	4 Rivers
Cleveland Elementary	6E	Blaine	Hi-Line
Cohagen Elementary	6E	Garfield	Southeast
Colstrip Public Schools	3E/3H	Rosebud	Southeast
Columbia Falls Public Schools	2E/2H	Flathead	Northwest
Cooke City Elementary	6E	Park	4 Rivers
Corvallis K-12 Schools	1K	Ravalli	Western

Craig Elementary	6E	Lewis and Clark	Western
Deep Creek Elementary	6E	Cascade	Central
Deer Lodge Elementary	3E	Powell	Western
Deerfield Elementary	6E	Fergus	Central
Dodson Public Schools	5E/5H	Phillips	Hi-Line
Dutton K-12 Schools	2K	Teton	Northcentral
Ekalaka Elementary	5E	Carter	Southeast
Elliston Elementary	6E	Powell	Western
Galata Elementary	6F	Toole	Northcentral
Gardiner Elementary	4E	Park	4 Rivers
Garrison Elementary	6E	Powell	Western
Gold Creek Elementary	6E	Powell	Western
Grant Elementary	6E	Beaverhead	4 Rivers
Hall Elementary	6E	Granite	Western
Hamilton K-12 Schools	1K	Ravalli	Western
Hardin Public Schools	2E/2H	Big Horn	Southcentral
Havre Public Schools	2E/2H	Hill	Hi-Line
Hays-Lodge Pole	2K	Blaine	Hi-Line
Heart Butte High School	4E/4H	Pondera	Northcentral
Helena Public Schools	1E/1H	Lewis and Clark	Western
Helmville Elementary	6E	Powell	Western
Jackson Elementary	6E	Carbon	Southcentral
Jordan Elementary	5E	Garfield	Southeast
Kalispell Public Schools	1E	Flathead	Northwest
Kester Elementary	4E	Lewis and Clark	Western
K-G Elementary	5E/5H	Hill	Hi-Line
King Colony Elementary	6E	Fergus	Central

Knees Elementary	6E	Chouteau	Central
Libby K-12 Schools	1K	Lincoln	Northwest
Liberty Elementary	5E	Liberty	Hi-Line
Three Forks Elementary	4E/4H	Gallatin	4 Rivers
Trinity Elementary	5E/5H	Blaine	Hi-Line
Turner Elementary	6E	Lewis and Clark	Western
Twin Bridges K-12 Schools	2K	Madison	4 Rivers
Valley View Elementary	6E	Lake	Northwest
Van Norman Elementary	6E	Garfield	Southeast
Warrick Elementary	6E	Chouteau	Central
Western Glacier Elementary	5E	Flathead	Northwest
Wisdom Elementary	6E	Beaverhead	4 Rivers
Wise River Elementary	6E	Beaverhead	4 Rivers
Wolf Creek Elementary	6E	Wolf Creek	Western
Zurich Elementary	5E	Blaine	Hi-Line

Participating Districts by MASS Region



• Indicates school districts that participated in the 2001 EISENHOWER ESEA Title II Survey.
 Areas outlined in **bold** are regions of the Montana Association of School Superintendents.

TABLE 7-3: Teaching Assignments by Subject Area, 1996-97 and 1998-99

Teaching Assignments	Full-Time Equivalent Staff		
	96-97	98-99	Difference
Elementary Self-Contained	3,863	3,816	-47
Special Education	735	825	90
English	848	818	-30
Mathematics	668	633	-35
Science	627	606	-21
Health Enhancement	575	598	23
Social Studies	589	570	-19
Music	394	425	31
Title I	351	403	52
Applied Technology	252	291	39
Art	247	262	15
World Languages	201	208	7
Business & Related	212	184	-28
Other Vocational Ed	232	171	-61
Computer Education	115	132	17
Gifted and Talented	49	56	7
Other areas	321	308	-13
Total	10,279	10,306	27

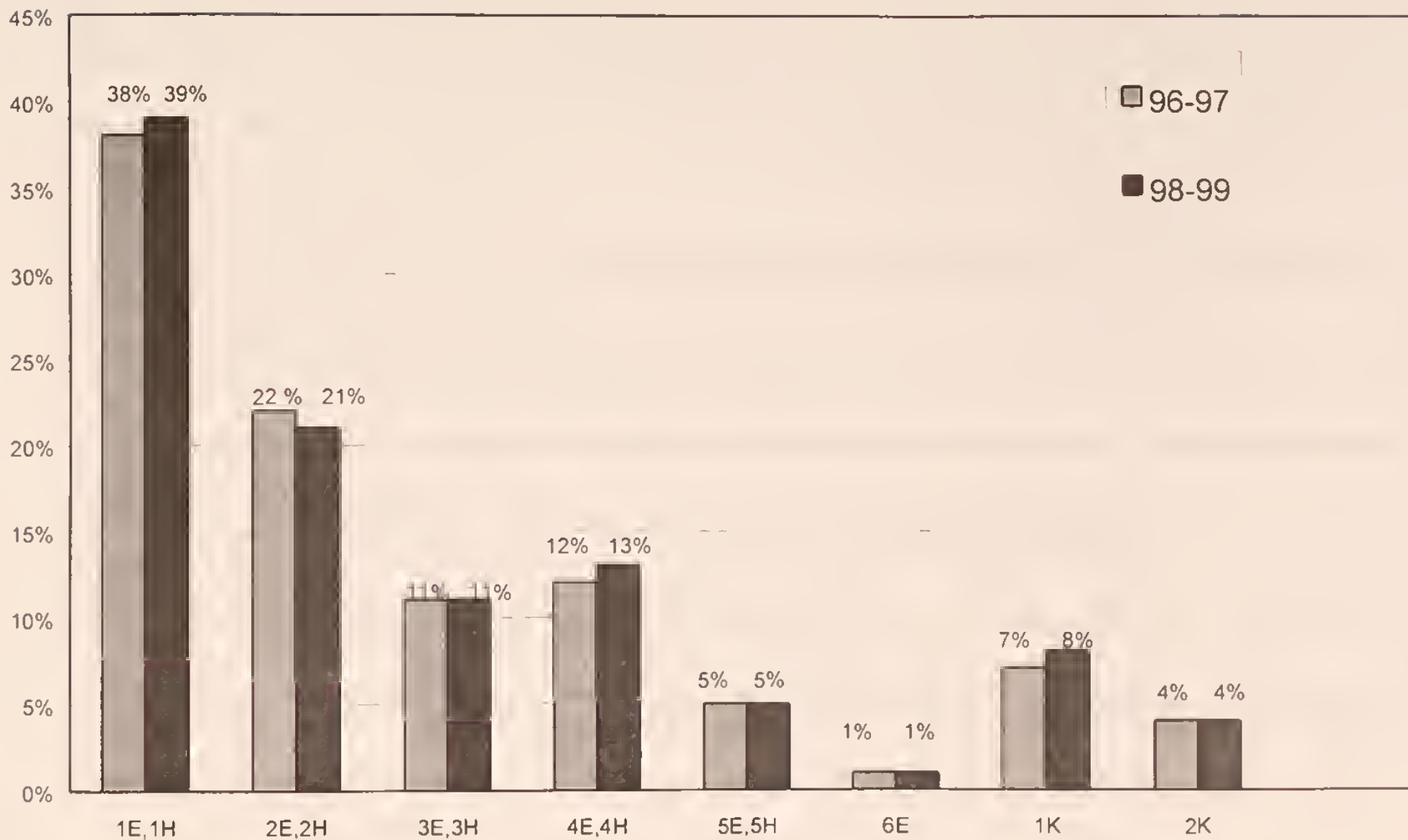
Excerpt from Montana Statewide Education Profile, 2001, pg 55

School District Enrollment Size Categories

Size Cat.	Category Definitions	Total Enrollment in Elementary		Size Cat.	Category Definitions	Total Enrollment in High School		Total Enrollment Combined	
		1996-97	1998-99			1996-97	1998-99	1996-97	1998-99
1E	Elementary greater than 2,500 students	40,815	39,545	1H	High School greater than 1,250	21,732	21,986	62,547	61,531
2E	Elementary 851 to 2,500 students	25,304	23,263	2H	High School 401 to 1,250 students	10,093	10,045	35,397	33,308
3E	Elementary 401 to 850 students	12,927	12,377	3H	High School 201 to 400 students	5,631	5,145	18,558	17,522
4E	Elementary 151 to 400 students	15,414	14,852	4H	High School 76 to 200 students	5,059	5,129	20,473	19,981
5E	Elementary 41 to 150 students	6,372	5,789	5H	High School 75 students or less	1,582	1,422	7,954	7,211
6E	Elementary 40 or fewer students	1,602	1,461					1,602	1,416
1K	K-12 400 students or more			1K	K-12 400 students or more			11,819	12,444
2K	K-12 fewer than 400 students			2K	K-12 fewer than 400 students			6,114	6,355
					Total Students			164,464	159,813

Excerpt from Montana Statewide Educational Profile, 2001, Appendix C

Percent of Total Enrollment for School District Size Categories



Excerpt from Montana Statewide Education Profile, 2001, Appendix C

**1999 and 2000 Eisenhower ESEA Title II
Teacher Self-Assessment and Professional Development Survey**

Details for Reading Data and Findings:

Survey Questions Regarding Each High Quality Professional Development Indicator (NOTE: The bolded number in parenthesis indicates weight of response within the indicator category.)

- Indicator 1: Professional Development/Systemic Improvement.** Professional development focuses on individual, collegial and organizational improvement.
1. My professional development activities focus on teachers as central to student learning yet include other members of the school community. **(2)**
 2. My professional development activities focus on individual, collegial and organizational improvement. **(4)**
 3. Staff development is viewed as an essential component for achieving the goals of my school and is valued as an integral part of my school. **(4)**
- Indicator 2: High Quality Content.** Professional development helps teachers teach to state and national content standards and reflects best available research in teaching and learning.
1. My professional development activities encourage teachers to be active, investigative, reflective practitioners. **(2)**
 2. My professional development activities reflect best available research and practice in teaching, learning and leadership. **(4)**
 3. My professional development enables teachers to develop further experience in subject content, teaching strategies, uses of technology, and other essential elements in teaching to high standards. **(4)**
- Indicator 3: Support During Implementation.** Professional development is ongoing, collaborative, and supportive of the implementation into institutionalization of new strategies.
1. Teachers are organized into support teams during implementation of new content or teaching strategies. **(2)**
 2. I am involved in collaborative planning on a weekly basis. **(3)**
 3. My professional development activities support me through the institutionalization of a new teaching strategy. **(4)**
 4. My professional development includes follow-up activities that allow me to reflect upon the impact of a new strategy. **(3)**
- Indicator 4: Data-Driven Professional Development.** Professional development is determined through a data collection and analysis process.
1. I reflect on and utilize my own classroom data to plan instruction strategies. **(2)**
 2. Our staff development decisions are based on data regarding positive student achievement outcomes. **(3)**
 3. Reading, studying and discussing student needs and the best strategies to meet those needs precedes decisions concerning staff development. **(3)**
 4. My students' achievement indicates that my staff development activities have lead to increased student learning. **(2)**

4

5

